R E P O R T R E S U M E S

ED 019 117 PS 000 810

A FRESH APPROACH TO EARLY CHILDHOOD EDUCATION AND A STUDY OF ITS EFFECTIVENESS. LEARNING TO LEARN PROGRAM.

BY- SPRIGLE, HERBERT AND OTHERS
LEARNING TO LEARN INC., JACKSONVILLE, FLA.

EDRS PRICE MF-$0.25 HC-$1.24 29P.

DESCRIPTORS- *PRESCHOOL PROGRAMS, COGNITIVE DEVELOPMENT, *CHILD DEVELOPMENT, PARENT PARTICIPATION, LOWER MIDDLE CLASS, CULTURALLY DISADVANTAGED, CURRICULUM RESEARCH, PRESCHOOL CHILDREN, LANGUAGE SKILLS, *LEARNING MOTIVATION, LEARNING THEORIES, EXPERIMENTAL PROGRAMS, *PROGRAM EVALUATION, EDUCATIONAL OBJECTIVES, *SEQUENTIAL LEARNING, LEARNING TO LEARN SCHOOL,

AN EXPERIMENTAL PRESCHOOL PROGRAM HAS BEEN DEVELOPED, THE PRIMARY OBJECTIVE OF WHICH IS TO HELP THE CHILD TO LEARN THE PROCESS OF LEARNING. ORGANIZED ON THE ASSUMPTION THAT COGNITIVE GROWTH PROCEEDS FROM MOTOR TO PERCEPTUAL TO SYMBOLIC FUNCTIONING, THE PROGRAM EMPHASIZES THE IMPORTANCE OF LANGUAGE AS A TOOL FOR THINKING AND REASONING. AN EVALUATIVE STUDY OF THE PROGRAM WAS CONDUCTED IN WHICH 23 LOWER-MIDDLE CLASS PARTICIPANTS WERE COMPARED WITH A CONTROL GROUP OF SIMILAR CHILDREN ENROLLED IN A TRADITIONAL KINDERGARTEN PROGRAM. PRETESTS OF SCHOOL READINESS SKILLS, VOCABULARY DEVELOPMENT, MOTOR COORDINATION, AND INTELLIGENCE WERE ADMINISTERED. INDIVIDUALS WERE MATCHED ACCORDING TO PRETEST SCORES, AGE, SEX, AND SOCIOECONOMIC LEVEL. ON 21 OF 25 DEVELOPMENTAL MEASURES ADMINISTERED AS POSTTESTS, THE EXPERIMENTAL GROUP EXCELLED SIGNIFICANTLY. THE SUPERIOR PERFORMANCE OF THE EXPERIMENTAL GROUP WAS MOST APPARENT IN THE AREA OF LANGUAGE SKILLS DEVELOPMENT. ANALYSIS OF THE DATA INDICATES THAT THE EXPERIMENTAL PROGRAM IS OF MOST BENEFIT TO THOSE CHILDREN WITH PRETEST SCORES IN THE LOWER RANGE OF INTELLIGENCE. A COMPARISON OF THE DATA ACCUMULATED IN THIS STUDY WITH THAT OF A PREVIOUS STUDY OF CULTURALLY DEPRIVED CHILDREN SUGGESTS THAT THE EXPERIMENTAL PROGRAM IS PARTICULARLY EFFICACIOUS FOR CHILDREN FROM LOWER SOCIOECONOMIC BACKGROUNDS. (JS)

U. S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

ED019117

A FRESH APPROACH TO EARLY CHILDHOOD EDUCATION AND A STUDY OF ITS EFFECTIVENESS

PS 000810

LEARNING TO LEARN PROGRAM

Directors and Developers of the Program

Herbert Sprigle, Ph.D., Joan Sprigle, M.A.

Learning to Learn School, Inc.
1936 San Marco Blvd.
Jacksonville, Florida 32207

Directors of the Evaluation Study

Vernon Van De Riet, Ph.D., Hani Van De Riet, Ph.D.

Department of Clinical Psychology
University of Florida
Gainesville, Florida 32601

Consultants

Kenneth Wann, Ed. D.
Columbia University

Halbert Robinson, Ph.D.
University North Carolina

Samuel Harris, Ed.D.
Jacksonville University

The project was supported by the Carnegie Corporation of New York. This report is submitted as partial fulfillment of the terms of the grant.

PREFACE

Although the Learning to Learn School is now only two years old, its opening was preceded by a year of intensive effort in the development of curriculum and curricular materials. The two years of operation have seen the rapid growth and expansion of the school far beyond the founder's plans at its inception. With this growth there has been a corresponding change in the originator's conceptualization of the function of the School.

The early plans for the School included the development of a unique program in early childhood education for five year-olds and a continuing evaluation of its effectiveness through carefully controlled research. The project has grown to include (1) studies of the development of children aged four to eight, (2) demonstration and training, and (3) curriculum development and assessment.

The Learning to Learn School has an unusual teacher training program which permits student teachers to become involved in parent discussion groups in addition to classroom experiences. One-way viewing rooms and monitoring systems permit additional students and faculty to observe the program without any distraction to the children. The School receives many requests from faculty members of university and college departments of education who are developing new programs or re-evaluating existing ones.

Development of curriculum and curricular materials is an ongoing project. Almost daily assessment by the staff gives us an immediate feedback as to the timing, appropriateness, and relevancy of the games and activities which make up the program.

The rapid growth of the Learning to Learn School was the result of two happy events. One was the impressive data that have accumulated over the past two years which suggest the program has the potential for making a significant impact on early childhood and elementary education. The other fortunate event was the generous support by Carnegie Corporation of New York, without whose assistance the School would not have been able to operate. We are especially grateful to Mrs. Barbara Finberg for her cooperation and interest in our work. Because of Mrs. Finberg and her Associates at Carnegie, we have been able to make a small contribution to young children and education.

TABLE OF CONTENTS

Abstract 7

Introduction 8

The Learning to Learn Program 9

An Evaluation Study of the Learning to Learn Program 19

Results of the Study 21

The Significance of this Study for Early Childhood Education 29

Abstract

The current evidence that early childhood is perhaps the most important period in the development of the child's ability to think, reason, and learn, has led to the necessity for a fresh approach to early childhood education which emphasizes principles of cognitive development. One of the major principles is that this development follows an orderly sequence of growth which proceeds from motor to perceptual to symbolic levels. This study describes and evaluates such a program based on the sequential principle.

The Learning to Learn Program was conceived and developed on the premise that the primary objective of early childhood education is to help the child learn to learn. The seven basic principles underlying the program are as follows:

(1) The child must be an active participant in the acquisition of knowledge and be given a major share of the work in what he learns.

(2) The child must receive feedback that the application of his knowledge makes a contribution to himself and someone else.

(3) The internal satisfaction and feelings of adequacy which develop from the knowledge that he can cope with and master his environment stimulate the child's growth toward independence and achievement.

(4) Learning becomes alive and more meaningful to the child when it is put into the form of a problem that poses a challenge and sparks his curiosity.

(5) For learning to become a permanent part of the child's repertoire it must be immediately useful in his everyday behavior.

(6) The child must be exposed to learning materials and situations which provide the opportunity for the interaction of multiple sensory and motor activities and for the accurate labeling and communication of the information received.

(7) The timing, continuity, and structuring of learning experiences are more important than the simple exposure to them.

An integral part of the Learning to Learn Program is a monthly parent discussion group focusing on how they can help their children learn.

An evaluation of the program was obtained by matching a group of 24 lower-middle class children enrolled in the program with a group of children in a traditional kindergarten program. This matching was done on the basis of a number of variables including intelligence, school readiness skills, and socio-economic level. At the end of the school year the children were compared by means of performance on a wide variety of developmental measures. The Learning to Learn children made significantly larger gains during the year than the traditionally trained children on almost all measures. These differences were usually large enough to be of practical as well as statistical significance.

The evidence from this study and other ongoing studies gives strong support to the theory that early childhood education is important and advantageous for the overall development of the child and that it is particularly important for children from lower-socio economic backgrounds. It also indicates that different kinds of early childhood programs can and do affect the overall development of the child differently, and that a well organized program, such as the Learning to Learn Program, achieves a larger developmental gain than one which does not have this kind of structure and emphasis.

Introduction

Currently there is a considerable rise of interest in developing new curricula and materials for early childhood education. The impetus for this interest comes from (1) the need for new programs for the culturally deprived child and (2) the evidence from recent research which questions many earlier assumptions concerning the optimal environment for cognitive growth.

One of these traditional assumptions is the belief that development is a natural unfolding process relatively uninfluenced by the environment. This belief appears invalid on every level from the biological to the psychological as we come to see that there are "critical periods" in the organism's development in which certain stimulation in the environment must be present if the organism is to develop its potential. It appears increasingly likely that the preschool years constitute the most important of these "critical periods" with respect to cognitive development. (Heywood, in press; Hunt, 1961)

A second traditional assumption is that the child's mind is a delicate mechanism which is not ready to think and reason until the primary grades and that a program of intellectual development will throw the mechanism out of balance resulting in a socially and emotionally maladjusted child. Recent evidence (Bruner, 1966; Ojeman, 1963; Wann, 1962) suggest that we have underestimated the child's strength, potential, and love of learning. The confidence and improved self-concept which come with genuine achievement and the knowledge of how to learn can result in a happier, well adjusted, and better educated child.

A third traditional assumption is that the only requirement for children to reach the milestones of development is an abundance of rich experiences and tender loving care. While this is likely to produce a happy child, it is unlikely to produce either a well-adjusted or well-educated child. Developmental psychologists have long maintained that intellectual development is not haphazard (Brunner, 1966; Piaget, 1963; Hunt, 1961) but rather proceeds along an orderly sequence of motor-perceptual-symbolic phases with transitional periods.

A fourth assumption is that the child must simply acquire knowledge or content. In an increasingly complex world it would appear that the child must learn how to learn rather than the mere accumulation of present knowledge. The abilities to solve problems and to creatively explore the universe are far more fundamental.

What this implies is the necessity for an early childhood education program which (1) is appropriate to the stage of cognitive development at which the child is, (2) makes maximal use of the child's abilities, (3) makes use of a planned sequence of environmental stimulation which is based on a knowledge of the stages of cognitive development, (4) develops the *process* of learning, (5) guides and structures the learning experiences rather than confronting the child with random, accidental stimulation.

New experiences are introduced and shared in the morning circle.

The planned experience lends itself to keener observation and greater sensitivity to its structure.

The Learning to Learn Program

The Learning to Learn Program was conceived and developed on the premise that the primary objective of early childhood education is to help the child learn to learn. This premise leads to the following seven basic principles underlying the Learning to Learn Program:

(1) The child must be an active participant in the acquisition of knowledge and be given a major share of the work in what he learns. The child is not considered to be a passive data bank that is filled by a highly verbal teacher who "teaches" the child all he knows.

(2) The child must receive feedback that the application of his knowledge has made a contribution to himself and someone else. Such a realization builds self-confidence and self-worth.

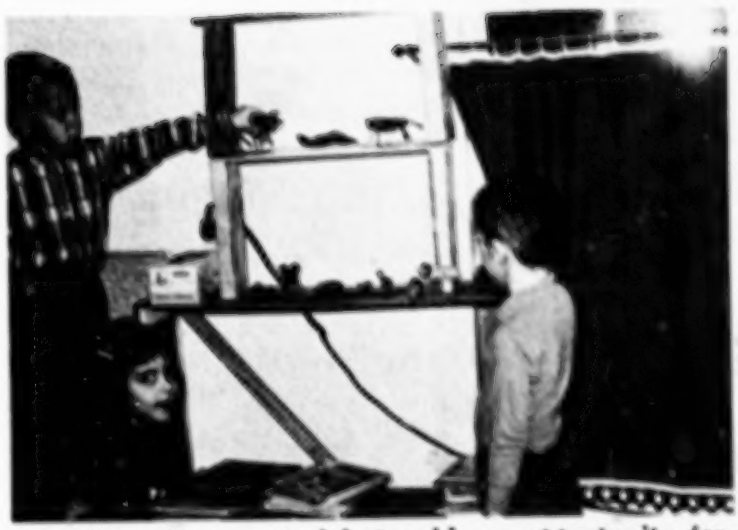
(3) The internal satisfaction and feelings of adequacy that develop from the knowledge that he can cope with and master his environment stimulate the child's growth toward independence and achievement.

(4) Learning becomes more meaningful to the child when it is in the form of a problem which challenges him and sparks his curiosity. The emphasis is placed on the process of problem solving and not on the accuracy of the solution. Such an approach encourages decision making and the development of flexible cognitive sets and strategies for learning without fear of failure and disapproval.

(5) The verbal symbols, concepts, skills and attitudes learned will more readily become a part of the permanent repertoire of intelligent behavior if they are immediately useful and helpful in the child's every day world.

(6) The child must be exposed to opportunities for the interaction of multiple sensory and motor activities and the accurate labeling and communication of the information received. The child is usually fascinated with the realization that he can internalize an external process, organize and report it to a listener who understands the logic of his thoughts. This is especially intriguing when the data processed are from sources other than the eyes and ears.

(7) Learning experiences for the child take on value not in mere exposure but in their timing, continuity and the ways they are structured. Appropriate timing and sequencing of experiences regulate the amount and intensity of stimulation, provide an atmosphere that lends itself to attention, concentration and greater sensitivity to the structure of the experiences. This approach assures that the child is moving forward by providing a hierarchial structure of learning experiences.



A variety of raw materials provide an opportunity for creative expression.

The child is encouraged to explain or describe an idea that gained expression through hard work, persistence, and effort.

Asking the child if we can share his work with the class helps to promote self worth and feelings of adequacy.

These seven principles have been shaped by a knowledge of child development, education, learning and by daily observations of teachers' and childrens' behavior and their interaction during the two year experimental use of the Learning to Learn Program.

The organization of the Learning to Learn Program was built on the assumption that cognitive growth and development proceed in an orderly sequence with periods of transition. It was assumed, on the basis of past research, that the sequence proceeds from motor to perceptual to symbolic aspects of cognitive functioning. In the motor stage the child's first cognitive working concern is in manipulating the world through actions. By establishing a relationship between experience and action, the child becomes aware of certain surface features by which he can identify the objects with which he works and the world around him. Through the perception of the world around him he learns the relationships between the various things he observes. He must be given the opportunity to perceive, recognize, categorize, and discover relationships. This leads to the stage of symbolic formation which enables the child to talk about and deal with things and ideas in the abstract, or in the absence of any tangible objects or relationships. With the acquisition of the ability to communicate verbally comes the capacity to recall the past, represent the present, and to think about the future and the "possible". Language becomes a vitally important tool for thinking, reasoning, and communicating things that the child has not said or heard before.

With the establishment of the program within a theoretical framework, the next essential step toward putting the theory to work was to determine where most four or five year-olds are with respect to their development. Psychological and educational literature provided quite clear evidence in this regard. A more challenging step was the necessity for translating theory and research into practical content which would facilitate a child's progress through the developmental sequence.

The natural choice for something to motivate, stimulate, and appeal to children was the use of games or a game atmosphere. The games employed in this program were constructed around five content areas (clothing, food, animals, furniture, transportation) and chosen because examples of this content are familiar to children of all socio-economic backgrounds and because they are readily available as real or miniature three-dimensional objects.

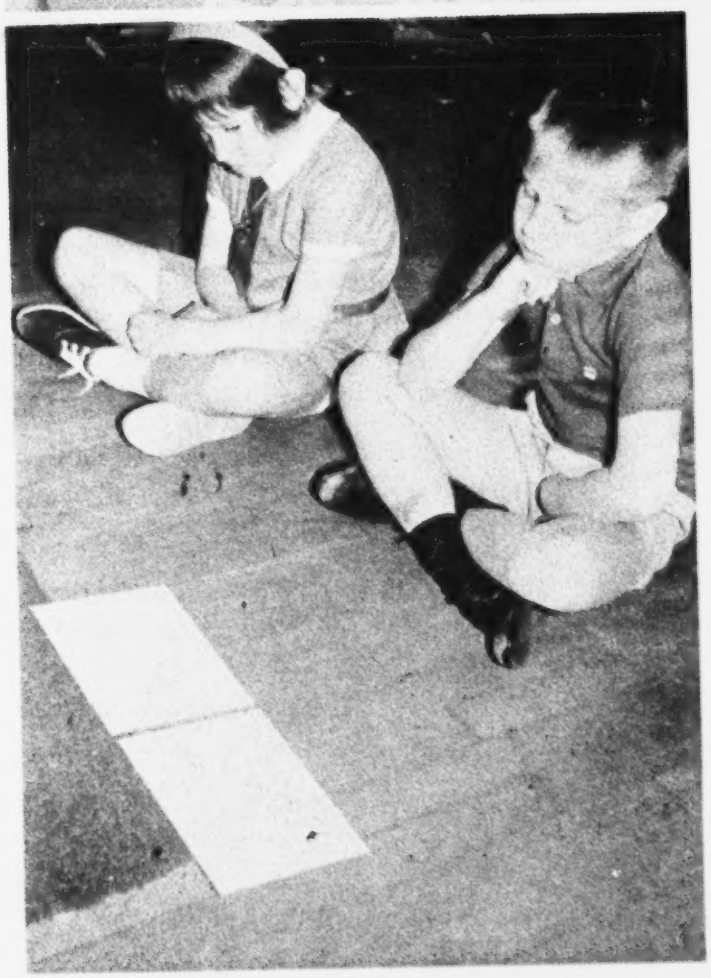
By beginning with a few examples of each content area and gradually expanding to include more members of the class, it was possible to develop a variety of games and activities, each of which is one step beyond the previous one and each incorporating the experiences and knowledge acquired by the child. Each of the five areas is sequenced in such a way that each is revisited and repeated in a variety of ways. Each time, however, the game or activity moves one step beyond the real and the concrete toward the abstract. The real

To give the child experience in organizing his thoughts and using language in a way that a listener understands is the primary objective in ordering pictures.

orange, for example, is replaced by a picture of an orange as the only stimulus, and finally, the games are highly verbal and require statements about an orange. Every game or activity actively engages the child in some kind of interplay of manipulation, perception, and verbalization.

This gradual transformation of overt action into mental operations is a direct consequence of Piaget's key tenet that stable and enduring cognitions about the world come about only through a very active commerce with this world on the part of the knower (Flavell, 1963, p. 367).

It should be pointed out, however, that the goals of the program go beyond competence in manipulating language. The program gives the child an opportunity for the development of strategies of gathering information, problem-solving, and decision making. A list of skills and concepts children acquire is provided in Table 1.



Activities that pose a problem, require thought and decision making are appealing and stimulating to children.

TABLE I

1. Information gathering and processing through the use of all the senses
2. Observation, identification, and labeling of objects
3. Attention to and concentration on attributes that discriminate one object from another (what makes a pear a pear)
4. Classification
5. Classes and sub-classes
6. Identification and classification on the basis of reduced clues
7. Encouragement in the use of guesses and hunches
8. Decision making
9. Use of past learning to make decisions
10. Problem solving
11. Reasoning by association, classification, and inference
12. Anticipation of events and circumstances
13. Expression of ideas
14. Imagination and creativity
15. Conventional (in contrast to idosyncratic) communication
16. Operations on relationships
17. Exploration of numbers and space

After the children master the game in the small group, it is placed in the large classroom.

It can be seen that the program not only exposes children to experiences that will gently nudge them along in their development, but also equips them with tools and techniques which enable them to learn how to learn. The emphasis on creative exploration is in vivid contrast to Montessori programs which teach the child classification and description of the world around them. An important advantage of this approach is that it makes the child more independent since his past experiences help him master new situations. His greater maturity is evident in his reliance upon his own resources and less dependence on the teacher. He experiences tremendous satisfaction from the knowledge that he knows how to solve problems and to grow independently.

The teachers in this program are child rather than subject matter oriented. Their major purpose is to pose problems for the children, ask questions, and to stimulate interest and curiosity. The aim of the program is to get the child to become active in the learning process and to make his own discoveries, formulate his own questions, and learn from his own activities, observations, and formulations. The teacher, therefore, must be perceptive and sensitive to how the child works with and uses the materials.

Two teachers, as well as two classroom areas, are necessary. One room is large enough to accommodate a class engaged in a variety of activities. A smaller room is used by one teacher for short sessions devoted to the planned sequential activities. Here the size of the group is limited to four children who are homogeneous with respect to level and rate of learning. The careful use of groups is in accord with Piaget's second major implication for education.

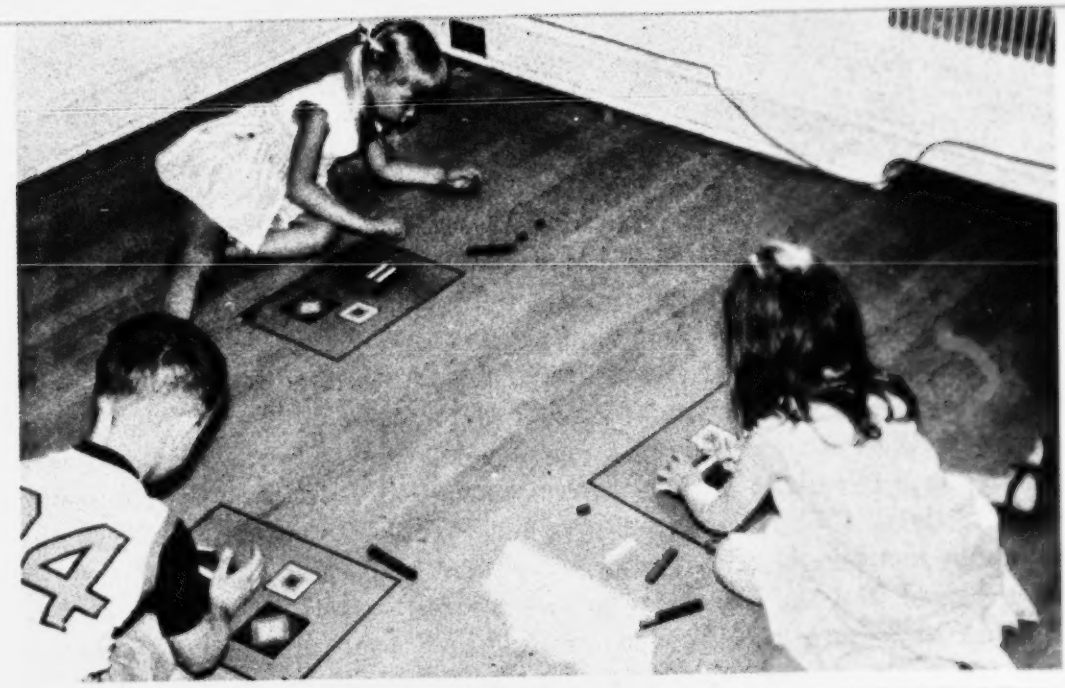
> "If social cooperation is thus one of the principal formative agents in the spontaneous genesis of child thought, it is an imperative necessity for modern education to make use of this fact by according an important place to socialized activities in the curriculum." (Aebli, 1951, p. 60)

Considerable stress is placed on the learning atmosphere. The other children must show the learner (player) respect by being quiet so he can "think with his brain" (make observation, organize information and his thoughts before responding.) With such an emphasis it soon becomes apparent to the child that he is important and what he is trying to achieve is worthwhile.

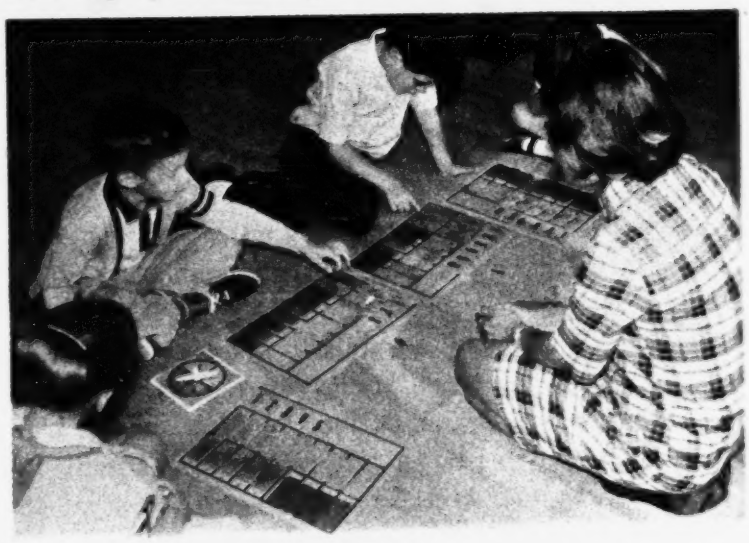
The Program for Parents

Another unusual aspect of the Learning to Learn Program is the participation of both mother and father of each child in monthly discussion groups. The parents were divided into two groups small enough to encourage active participation.

At the initial meeting parents were asked two questions: (1) In what way can we help your child this school year, and (2) What help would you like



A foundation for mathematics is built upon observation, exploration, and discovery of relationships.



The children move forward to an understanding and use of numbers.

to get from these discussion groups? The responses to these questions were used as a basis for the content of the meetings and in addition, the curriculum and materials were periodically presented to the parents.

The teachers attended these meetings but for the most part were listeners. The director served as a discussion leader talking approximately 10 percent of the time while parents talked 90 percent of the time.

In addition to the monthly discussion groups there were individual conferences with parents in January and in June. This is the way the conference was structured: "We have learned something about your child as we work and play with him here at school, and we would like to share with you what we have learned. But the school day is such a small part of his life compared to the time he is home with you, his brothers and sisters and friends. This is a very important part of his life and we would like you to share that part with us. By sharing in this way we might be able to help each other and in so doing, help your child. We might start by your telling us about him at home with his family and other children in the neighborhood."

This appeared to be a friendly, non-threatening approach that helped parents reveal the worries, concerns, disappointments, and joys of family living and child rearing. It was an excellent means for leading into problems with the child in the classroom because invariably the same behavior was occurring at home or in the neighborhood. But it was something that could be discussed without the parents being on the defensive because they are the ones who mentioned it, not the teacher.

The staff did not attempt to interpret or analyze what was going on at home. In most cases it was the father who said, "Maybe I am too strict" or "Maybe I do not spend enough time with David, and when I do I have very little patience". Parents begin to get insight into their questions and ways to solve them by listening to themselves.

Summary

To summarize, learning and development should not be left to chance. The appropriate sequence of experiences and the ways they are guided and structured provide for better opportunity for learning and development than random, accidental experiences. Thus, the program is so planned to give children the opportunity to discover strategies for gathering, organizing, and processing information, to develop effective language and communication skills which enable them to get from the known to the unknown. Moreover, children learn to learn when they are actively involved, are able to see that learning is useful and meaningful, when they can get some immediate feedback of their efforts, and when they know they have made a contribution to themselves and someone else. The emphasis is not on memorizing but on the child's learning the process of learning. The Learning to Learn Program puts little stress on beginning at point A and ending at point B but rather on how the child gets from A to B. The process is considered more important than the end product.

An Evaluation Study of the Learning to Learn Program

The evaluation of the Learning to Learn Program was performed by an independent evaluation team from the University of Florida. This is the second study dealing with an evaluation of the Learning to Learn Program. The first one consisted of comparing three matched groups of culturally deprived Negro children. One group of 25 children received the experimental program at the Learning to Learn School in Jacksonville, Florida. A second group received traditional training in an established kindergarten in the community, and a third group consisted of children who had no formal preschool training but rather remained at home during the school year. The results indicated that the experimental program showed a distinct advantage over the two control groups. For example, on the Stanford Binet Intelligence Test the experimental children had gained approximately 14 points in intelligence whereas the traditionally trained group maintained the same level, and the no treatment children dropped about 7 points during the nine months of the program.

The present study was designed to test whether the Learning to Learn Program would be effective with lower-middle class children who usually have been exposed to more educational opportunities and values. These lower-middle class children were separated into two early childhood training programs. One group participated in the experimental Learning to Learn Program while the other group attended two well established traditional kindergartens which had experienced, well qualified teachers.

Population and Sample

There were 23 children in each group who were selected from lower-middle socio-economic class families whose parents had a high school education or less. Occupationally the families consisted of blue collar and white collar workers and all families lived in rather homogeneous neighborhoods consisting of similar families. The average annual income of the families was $6,400.00.

This population was selected because it constitutes the largest segment of school children. Lower socio-economic class families were excluded because of the previous study which was completed with children from that background. College educated parents were excluded because their children already have been heavily exposed to many of the variables under investigation.

The children in the control group were matched as closely as possible with the experimental children in the following ways: (1) age; (2) sex; (3) Stanford Binet IQ; (4) school readiness skills as measured by the Sprigle

School Readiness Screening Test; (5) motor coordination as measured by the Seguin Form Board; (6) Vocabulary development as measured by the Vocabulary Subtest of the Stanford Binet; and (7) socio-economic status of the parents as measured by the parent's occupation, family income and residence.

Two of the control children moved during the year and had to be dropped from the study.

Instruments

The instruments used to measure a comprehensive range of developmental characteristics of the children were as follows:

Development Characteristics	Instruments
(1) General intelligence	Stanford-Binet Intelligence Scale, Form L-M
(2) Perceptual-motor skills	Bender Motor Gestalt Test
(3) Vocabulary development	Vocabulary subtest of the Stanford-Binet
(4) School readiness skills	Metropolitan Readiness Test School Readiness Screening Test
(5) The ability to express ideas	The Illinois Test of Psycho-linguistic Abilities Vocal encoding subtest
(6) Language comprehension	The Illinois Test of Psycho-linguistic Abilities Visual decoding subtest
(7) Verbal reasoning ability	The Illinois Test of Psycho-linguistic Abilities Auditory-vocal association subtest
(8) Social maturity	Rating scale completed by teacher and parents
(9) Spatial abilities	Seguin Form Board—Arthur Revision
(10) Gross motor coordination	Rail Walking Test
(11) Concept formation	The Illinois Test of Psycho-linguistic Abilities The visual-motor association subtest
(12) Creativity and imagination	Ratings of pictures and stories made by children
(13) Achievement motivation	Ratings by independent observers and by teachers

Procedure

In September of 1966, one group was brought into the experimental sequential program. The second group, exposed to traditional methods, attended programs consisting of group and individual activities designed to expose children to a large variety of stimulation, concepts and ideas. They emphasized self-help, socialization and sensory-motor experience. They were not, however, based on the developmental sequential program designed to teach children how to learn.

The following spring after completing the training programs the evaluation data were collected. The Metropolitan Readiness Test was administered by trained teachers to the children in small groups. The other data were collected in individual testing sessions by trained examiners from the University of Florida.

RESULTS OF THE STUDY

Pre-Post Comparisons

The two groups of kindergarten children had been matched on the basis of four test variables at the beginning of the program. Their scores on these variables at the beginning and end of the program are shown in Table 2. It can be seen that both groups made highly significant gains during the year with the experimental group making larger gains on these four variables.

TABLE 2

Mean Scores of Experimental and Control Groups Before and After Kindergarten Experience

		N.	Pre-Mean	Post-Mean	*t*	*p*
1. Binet Intelligence Score	Experimental	23	102.78	112.83	4.66	.001
	Control	21	101.95	107.33	2.31	.05
2. School Readiness Screening Test	Experimental	23	15.39	24.65	12.44	.001
	Control	21	15.85	22.24	8.39	.001
3. ITPA—Vocal Encoding	Experimental	23	11.13	16.47	4.50	.001
	Control	21	10.86	13.38	2.30	.05
4. ITPA—Auditory-vocal Association	Experimental	23	14.00	18.57	7.27	.001
	Control	21	13.38	17.43	7.67	.001

$t_{.95} = 1.72$
$t_{.99} = 2.51$
$t_{.999} = 3.50$

Comparisons at the Completion of the Program

The means and standard deviations of the 25 developmental measures taken by both groups of children at the completion of the program are given in Table 3. It can be seen that all except four measures showed the experimental group to be significantly superior to the traditional group. These differences are usually so large as to be of practical as well as statistical significance. The differences are most apparent in the broad area of language skills. The experimental children are also able to use verbal skills much more creatively as shown by their amazing superiority in the various aspects of story telling.

A more vivid portrayal of these results can be seen in the simple Graph 1 which depicts the number of children in each group falling into four categories of intelligence scores. It appears that the experimental program was of most benefit to those children scoring at the lower ranges of intelligence. These children were "pushed up" to an average level of functioning. This was even more true of the developmental measures other than the Stanford Binet.

TABLE 3

Post Training Mean Scores of the Experimental and Control Groups on 25 Developmental Measures

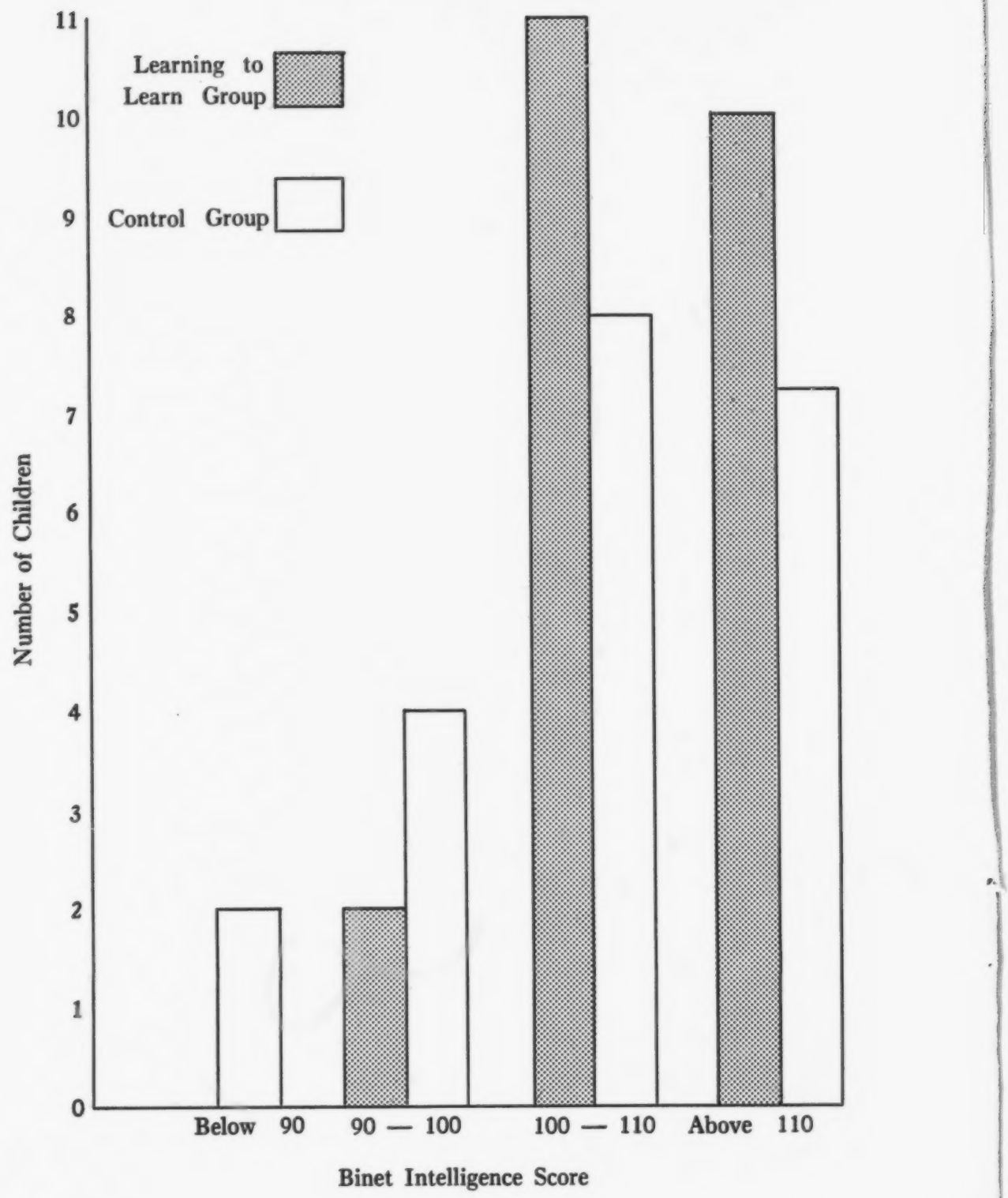
			Experimental	Control	*t*	*p*
1.	Binet Intelligence Score	Mean	112.83	107.33	1.33	N.S.
		S.D.	10.77	15.67		
2.	Binet Vocabulary	Mean	7.00	6.19	1.86	.05
		S.D.	1.22	1.60		
3.	Bender-Gestalt (Error Score)	Mean	7.91	11.48	-2.67	.01
		S.D.	4.32	4.32		
4.	Metropolitan—Word Reading	Mean	9.91	7.86	3.10	.01
		S.D.	1.69	2.25		
5.	Metropolitan—Listening	Mean	11.22	9.19	4.13	.001
		S.D.	1.42	1.76		
6.	Metropitan—Alphabet	Mean	12.87	8.05	4.46	.001
		S.D.	3.11	3.88		
7.	Metropolitan—Matching	Mean	9.48	6.24	3.76	.001
		S.D.	3.12	2.37		
8.	Metropolitan—Numbers	Mean	14.48	10.29	3.80	.001
		S.D.	3.99	3.06		
9.	Metropolitan—Copying	Mean	8.78	5.76	3.77	.001
		S.D.	2.26	2.91		
10.	Metropolitan—Total	Mean	66.78	47.38	5.40	.001
		S.D.	10.93	12.33		
11.	School Readiness Screening Test	Mean	24.65	22.24	2.05	.05
		S.D.	3.74	3.90		
12.	ITPA—Vocal Encoding	Mean	16.48	13.38	1.91	.05
		S.D.	5.66	4.77		
13.	ITPA—Auditory-Vocal Assoc.	Mean	18.57	17.43	1.18	N.S.
		S.D.	2.67	3.55		
14.	ITPA—Visual Decoding	Mean	13.26	11.71	1.98	.05
		S.D.	2.19	2.86		
15.	ITPA—Visual-Motor Assoc.	Mean	16.57	13.90	2.36	.01
		S.D.	3.84	3.41		
16.	Seguin Form Board (time score)	Mean	21.26	21.62	-0.27	N.S.
		S.D.	3.27	5.32		
17.	Rail Walking (error score)	Mean	10.78	16.48	-3.20	.01
		S.D.	5.44	6.08		
18.	Picture Rating—Total	Mean	9.43	8.14	1.08	N.S.
		S.D.	3.30	4.40		
19.	Story Rating—Words	Mean	35.30	10.95	7.12	.001
		S.D.	14.11	6.19		
20.	Story Rating—Appropriateness	Mean	3.35	2.38	3.66	.001
		S.D.	.70	1.00		
21.	Story Rating—Verbs	Mean	2.87	.33	4.87	.001
		S.D.	2.25	.64		
22.	Story Rating—Adjectives	Mean	4.17	2.00	4.27	.001
		S.D.	1.66	1.63		
23.	Story Rating—Complexity & Detail	Mean	3.04	1.29	6.98	.001
		S.D.	.81	.82		
24.	Story Rating—Total	Mean	48.74	16.90	7.30	.001
		S.D.	17.74	8.55		
25.	Human Figure Drawings	Mean	20.09	14.52	2.51	.01
		S.D.	9.24	3.84		

$N_e = 23$ $N_c = 21$ $df = 42$

$t_{.95} = 1.68$
$t_{.99} = 2.42$
$t_{.999} = 3.31$

GRAPH 1

Number of Children Scoring at Each of Four
Levels of Intelligence at the Completion of the Program



Ratings of Children's Progress by Teacher and Parents

Each child in both groups was rated at the beginning of the program and again at the end by his teacher and by one of his parents on a variety of behaviors. This "Progress Report" contained items measuring behavior in (1) intellectual development (e.g., curiosity, generating ideas, concentration) and (2) social and emotional development (e.g., attitude toward other children, other's attitudes toward him). Table 4 shows the mean scores obtained by the children in the two groups at the beginning and end of the school year. The teachers and parents of the control children did not see any significant improvement in their children on these measures. On the other hand, both parents and teachers of the experimental children saw significant improvement in their children on five of the six measures.

TABLE 4

Ratings of Children's Progress by Parents and Teachers
(low scores are better rating)

			Mean Pre	Mean Post	t	p
1.	Teacher's Total	Experimental	27.30	22.91	2.85	.01
		Control	23.29	23.43	–0.13	N.S.
2.	Parent's Total	Experimental	22.09	18.91	3.58	.001
		Control	22.90	21.76	1.03	N.S.
3.	Teacher's Intellectual Ratings	Experimental	10.52	7.74	4.72	.001
		Control	8.57	8.57	0.0	N.S.
4.	Parent's Intellectual Ratings	Experimental	13.83	12.65	1.12	N.S.
		Control	12.38	12.10	.45	N.S.
5.	Teacher's Social & Emotional Ratings	Experimental	8.22	7.00	2.61	.01
		Control	8.33	8.14	.48	N.S.
6.	Parent's Social & Emotional Ratings	Experimental	11.57	9.74	3.41	.01
		Control	11.86	11.05	1.05	N.S.

$N_a = 23$ $N_b = 21$ $t_a.95 = 1.72$ $t_a.99 = 2.51$ $t_a.999 = 3.50$
$df_a = 22$ $df_b = 20$ $t_b.95 = 1.72$ $t_b.99 = 2.53$ $t_b.999 = 3.55$

Achievement Motivation Ratings by Independent Experienced Teachers

Each of the children in the experimental group was rated by means of timed samples for achievement motivation. Two teachers, not connected with the program, each of whom had over ten years of experience with elementary and preschool children, observed each child for six separate one minute samples during free play over a two week period near the end of the program. This data could not be obtained on the control group because the nature of the classroom was somewhat different in that there was less opportunity for the child to select his own activities and this would have made it an unfair com-

parison. However, the descriptive data of these ratings are very interesting. Ninety-five percent of the time the experimental children were observed to have been involved in some kind of achievement activity. Achievement activity was broadly defined as reading, writing, playing with any kind of game or being involved in physical activity such as throwing balls, rings, darts, where there was a specific goal to the activity. Physical activities that had a direct goal were included such as competitive jumping or climbing. Any kind of creative play such as finger painting, building with any kind of material, coloring, drawing and imaginative play was also included. Activities not included were idleness and any activity which appeared not to have a definite goal such as scribbling, observing other children without participating, walking about or inactive sitting.

Over 90 percent of the time the children were rated as showing persistence and effort in their activities and as approaching the play activity in a planned and organized way. Sixty-two percent of the time they were rated as being very observant about what they were doing and as giving evidence that they were conscious of a definite goal toward which they were working. In an additional 29 percent of the time they were rated as having some goal for their activities and an awareness of working toward it.

These data would indicate that even in a free play situation the experimental children were for the most part concentrating on achievement and learning activities and developing their skills.

Achievement Motivation Ratings

Each child in both the experimental and control groups was also rated by his teacher on various characteristics related to achievement motivation. These characteristics were effort, persistence, goal directedness, independence of work, and fear of failure. The experimental children were rated significantly better in the areas of effort and goal directedness and were rated higher on the other characteristics but these differences were not statistically significant.

Parental Training Program

At the last discussion meeting the parents were asked to respond to the two questions that had been asked at the first meeting. The answers the parents provided were analyzed to determine to what extent the school helped their children. There was unanimous agreement that the school significantly helped their children in all of the areas mentioned at the first meeting. The feeling that their children had changed in a positive, growth-producing way was also indicated in the progress questionnaire the parents completed at the end of the year. The parents also felt they themselves profited immeasurably from the

meetings. When asked *how* he was helped the parent usually responded in terms of having developed more respect for a young child, of having learned the habit of listening to his child (before the parent merely heard him), of having come closer to the child because he is now "an interesting child." Parents were especially delighted with changes which resulted in a parent-child relationship which enhanced growth and development. For example, "I enjoy my child more now because what he says is interesting. Before she would just talk to hold my attention and that would annoy me." "I am amazed at some of the things he says. It seems like he is really figuring things out and then telling me about it." "I am delighted by the way my child is able to use words to express herself." "My child doesn't want me to help him anymore; he says he can do it himself."

From these statements and comments it is safe to conclude that from the parent's point of view the program was a success. There are other indicators, in addition to the parent's verbal statements, which are indices of the program's success and its potential for getting parents more interested and involved in education. Most apparent was the genuine parental interest as reflected by the attendance of the mothers at every meeting. The only times the fathers missed were when they were on a night shift, were out of town or had to stay home with a sick child. Their verbal statements and actions revealed that these parents were more than just interested; they became deeply involved in their children's education. An obvious index of this was their concern and apprehension about their children's progress and their own after leaving the school. It was the parents who initiated the idea that the children remain together in first grade in order that the first grade curriculum pick up where the Learning to Learn Program left off. This was proposed with full knowledge that it would be a hardship to the parents and children, some of whom lived as far as 20 miles from the school. In addition, the parents wanted something else for themselves. They asked that we continue the monthly discussion groups in the first grade classroom. They felt there was still more to learn for themselves. By having these monthly meetings, they would be kept abreast of what their children were learning and why.

A Comparison of the Effect of the Learning to Learn Program on Lower-Middle Class and Culturally Deprived Children

A question that immediately occurs when reviewing these results is what kind of child can most benefit from the experimental program. The present data, along with that of a study conducted a year ago, begin to answer that question.

In the year preceding this study a group of culturally deprived Negro children attended the experimental program while two matched groups either attended a traditional preschool program or did not attend school at all. The performance of these children was also evaluated and on every variable the experimental children were markedly superior to the other groups.

It is now possible to look for the differential effect of the experimental program on the culturally deprived children and the lower-middle class children. Table 5 shows the mean scores obtained by culturally deprived and lower-middle class children at the completion of the program. It is obvious that lower-middle class children are ahead at the end of the program but they also started with higher pre-program scores. The significant point is that the Learning to Learn Program results in greater improvement in the culturally deprived children than it does in the lower-middle class children. At the end of the program the culturally deprived children are functioning at a level very much like that of the lower-middle class children exposed to a traditional program.

TABLE 5

Comparisons of Culturally Deprived and Lower-Middle Class Children at the Completion of Kindergarten

Variables		Learning to Learn Program Mean	Traditional Program Mean	No Program Mean
Binet Intelligence Scores	Culturally Disadvantaged	104.12	90.33	83.29
	Lower-Middle Class	112.83	107.33	
Binet Vocabulary	Culturally Disadvantaged	5.62	3.71	2.71
	Lower-Middle Class	7.00	6.19	
Bender-Gestalt (error score)	Culturally Disadvantaged	11.96	15.46	17.33
	Lower-Middle Class	7.91	11.48	
Metropolitan Readiness Test—Total	Culturally Disadvantaged	66.46	44.71	40.79
	Lower-Middle Class	66.78	47.38	
School Readiness Screening Test	Culturally Disadvantaged	20.08	13.79	13.21
	Lower-Middle Class	24.65	22.24	
Seguin Form Board (time score)	Culturally Disadvantaged	23.46	31.46	33.08
	Lower-Middle Class	21.26	21.62	
Rail Walking (error score)	Culturally Disadvantaged	10.92	31.83	28.21
	Lower-Middle Class	10.78	16.48	
Human Figure Drawings	Culturally Disadvantaged	16.33	10.04	7.08
	Lower-Middle Class	20.09	14.52	

The Significance of this Study for Early Childhood Education

In reviewing the cumulative results of our studies there are several conclusions that are apparent. First, it is obvious from the data that a preschool program, whether of a traditional nature or one stressing teaching children how to learn, does make a significant difference in the development of the child. Both groups of lower-middle class children made large gains during the year and the lower class children in preschool programs were developmentally ahead of those without this experience.

Second, it can be seen that the structured program based on principles of cognitive development had a greater effect than the traditional programs focusing on self-help, socialization, and sensory-motor experience. The areas in which the Learning to Learn Program resulted in the greatest gains were those of verbal skills and creativity. Follow-up data (in progress) also indicates superior abilities using mathematical concepts. The area least affected by the program was that of activities involving motor coordination. This is exactly what educators and psychologists desire as both later school performance and adult tasks are fundamentally based on verbal skills, mathematical concepts, and creativity. Moreover, these are the attributes that the twentieth century increasingly demands of its successful citizens.

Third, the results of this study when added to those of the study on culturally deprived children indicate that the children who receive the most benefit from the experimental program are those who are behind in their intellectual development initially. This includes the culturally deprived child who missed exposure to the usual educational values and the lower-middle class child of below average intellectual ability. Although, of course, the brighter children also advanced, their progress was not as great as that of children who began at lower developmental levels. The brighter children seemed to concentrate their improvement in the area of creativity as measured by story telling and creative drawings. This conclusion is very exciting as this appears to be the ideal program for the culturally deprived, for the future drop-out, for the child who finds it hard to keep up with his classmates in a traditional program. It may well be that an initial exposure to the Learning to Learn Program will prepare such a child to function at the same level as his peers in a regular classroom in later years.

In contrast to the efficacy of the Learning to Learn Program with lower-class children, the traditional programs emphasizing self-help, socialization, and sensory-motor development appeared less effective with culturally deprived children than with lower-middle class children. However, the Learning to Learn Program was generally superior here, also.

It is imperative to consider the differential long term effects of early childhood programs on various groups of children. Our data (Van De Riet, Van De Riet, and Sprigle, in progress) and other studies (Kennedy, Van De Riet, and White, 1963; Heywood, in press) indicate that culturally deprived children without preschool experience fall behind in their overall development as they progress through school. In contrast, the follow-up study of deprived children who were in the Learning to Learn Program indicates that they are maintaining the gains attained in the program. At the end of first grade these children are still markedly superior to matched groups of children who either had no preschool experience or attended a traditional kindergarten program. These three groups will again be compared at the completion of second grade. On the other hand, studies of middle class children (Heywood, in press; Hunt, 1961) suggest that children without preschool experience either maintain their level or fall behind only slightly. This is probably because middle class children receive training in their own homes which tends to be similar to traditional preschool programs. The two groups of children in the present study will also be followed as they enter elementary school to determine whether the Learning to Learn Program has an effect which remains through the early school years.

The work with the parents of the Learning to Learn children was very gratifying because of the success in getting each parent involved with his child and the child's education. The director is convinced that one place to start the crusade for better schools and quality education is to educate the parents as you educate the child. These parents have had a living experience with quality education and became very vocal, almost demanding that it continue. They left no doubt concerning the type of school board and superintendent they would have representing them or the financial support they would give a school system. The answer to the need for quality lies not in getting parents "interested" in education but getting them "involved."

The evidence from these studies gives strong support to the theory that early childhood education is important and advantageous for the overall development of the child and that it is particularly important for children from lower-socio economic backgrounds. It also supports the hypotheses that different kinds of preschool programs can and do affect the overall development of the child differently, and that a well organized program such as the Learning to Learn Program in these studies, achieves a larger developmental gain than one which does not have this kind of structure and emphasis.

REFERENCES

Aebli, H. *Didactique psychologique: application a la didactique de la psychologie de Jean Piaget.* Neuchatel: Delachaux et Niestle, 1951.

Bruner, J. S. *Toward a Theory of Instruction.* Cambridge: Harvard University Press, 1966.

Flavell, J. H. *The Developmental Psychology of Jean Piaget.* Princeton: Van Nostrand, 1963.

Heywood, H. C. Experiential Factors in Intellectual Development: The Concept of Dynamic Intelligence. In J. Zubin (Ed.) *Psychopathology of Mental Development.* New York: Grune and Stratton, in press.

Hunt, J. McV. *Intelligence and Experience.* New York: Ronald Press, 1961.

Kennedy, W. A., Van De Riet, V., and White, J. C., Jr. A Normative Sample of Intelligence and achievement of Negro elementary school children in the Southeastern United States. *Child Development Monographs,* 1963, 28, (6) (Serial No. 90).

Ojemann, R. H. Piaget and the role of guided experiences in human development, *Perceptual Motor Skills,* 1963, 17, 927-940.

Piaget, J. *The Origins of Intelligence in Children.* New York: W. W. Norton & Company, 1963.

Wann, K. D. *Fostering Intellectual Development in Young Children.* New York: Bureau of Publications, Columbia University, 1962.